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on 7/5/05 Margaret A. Norcutt
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Margaret A. Norcutt
Typed or printed name of person signing certificate

July 5, 2005

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Re: Appellants: James A. Proctor, Jr. et al.
Application No.: 09/898,514 Filed: July 3, 2001
Confirmation No.: 4006
Title: Method for Allowing Multi-User Orthogonal and Non-Orthogonal Interoperability of Code Channels
Docket No.: 2479.2038-001

Sir:

Transmitted herewith is an Appeal Brief for filing in the subject application. The Appeal Brief is filed pursuant to the Notice of Appeal received by the U.S. Patent and Trademark Office on January 3, 2005.

1. [X] Appellant hereby petitions to extend the time for filing an Appeal Brief for four months from March 3, 2005 to July 3, 2005.

2. [ ] A [ ] month extension of time to extend the time for filing an Appeal Brief from [ ] to [ ] was filed on [ ] with payment of a $[ ] fee.

[ ] Appellant hereby petitions for an additional [ ] month extension of time for filing an Appeal Brief from [ ] to [ ].

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02 FC:1254 1590.00 OP

3. [ ] A Request for Oral Hearing before the Board of Patent Appeals and Interferences is being filed concurrently herewith.

4. Fees are submitted for the following:

[X]	Extension of Time for four (4) months		$ 1590
[ ]	Additional Extension of Time:		
	Fee for Extension ([ ] mo.)	$	
	Less fee paid ([ ] mo.)	- $	
	Balance of fee due		$ 0
[X]	Appeal Brief		$ 500
[ ]	Other _____		$
		TOTAL	$ 2090

5. The method of payment for the total fees is as follows:

[X] A check in the amount of $2090 is enclosed.

[ ] Please charge Deposit Account No. 08-0380 in the amount of $[ ].

Please charge any deficiency or credit any overpayment in the fees that may be due in this matter to Deposit Account No. 08-0380. A copy of this letter is enclosed for accounting purposes.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By Ralph Trementozzi

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Concord, MA 01742-9133
Dated: 7/5/2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	James A. Proctor, Jr., Pertti O. Alapuranen		
Application No.:	09/898,514	Group:	2664
Filed:	July 3, 2001	Examiner:	Chirag G. Shah
Confirmation No.:	4006		

For: METHOD FOR ALLOWING MULTI-USER ORTHOGONAL AND NON-ORTHOGONAL INTEROPERABILITY OF CODE CHANNELS

CERTIFICATE OF MAILING

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on 7/5/05 (Date) Margaret A. Norcutt (Signature)

Margaret A. Norcutt
Typed or printed name of person signing certificate

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted pursuant to the Notice of Appeal received in the U.S. Patent and Trademark Office on January 3, 2005, and in support of the appeal from the final rejection(s) set forth in the Office Action mailed on July 29, 2004. The fee for filing a brief in support of an appeal is enclosed.

A Petition for Extension of Time and the appropriate fee are being filed concurrently.

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

The real party in interest is IPR Licensing, Inc., 300 Delaware Avenue, Suite 527, Wilmington, Delaware 19801. On information and belief, IPR Licensing, Inc. was assigned the entire right, title and interest in the subject application, by virtue of an Assignment from InterDigital Patent Corporation, 300 Delaware Avenue, Suite 527, Wilmington, Delaware 19801 recorded on March 10, 2004 at Reel 014420, Frames 0435-0447. InterDigital Patent Corporation was, in turn, assigned the entire right, title and interest in the subject application, by virtue of an Assignment from InterDigital Acquisition Corp., 300 Delaware Avenue, Suite 527, Wilmington, Delaware 19801 recorded on February 19, 2004 at Reel 014351, Frames 0777-0785. InterDigital Acquisition Corp. was, in turn, assigned the entire right, title and interest in the subject application, by virtue of an Assignment from Tantivy Communications, Inc., 2200 Front Street, Suite 300, Melbourne, Florida 32901 recorded on February 26, 2004 at Reel 015000, Frames 0141-0152. Tantivy Communications, Inc. was, in turn, assigned the entire right, title and interest in the subject application, by virtue of an Assignment from the joint inventors to Tantivy Communications, Inc. recorded on September 12, 2001 at Reel 012143, Frames 0623-0626. As the attached report (Exhibit A) from the U.S. Patent and Trademark Office's Patent Application Information and Retrieval (PAIR) system, there may be other interests, such as security interests that may have been released or not.

II. RELATED APPEALS AND INTERFERENCES

Applicants, the undersigned Attorney, and Assignee are not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1 through 36 have been finally rejected, and a copy appears in the Appendix of this Brief. Claims 1 and 24 were amended in the Amendment filed on May 11, 2004. A copy of the claims and their status is included in the Appendix of this Brief.

IV. STATUS OF AMENDMENTS

An amendment was filed on May 11, 2004. However, the Amendment did not persuade the Examiner that the application was in condition for allowance.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to a Code Division Multiple Access (CDMA) communications system in which each user within one group of terminals uses a unique long Pseudorandom Noise (PN) code sequence to establish a unique logical communications channel with a base station. Users within a second group, however, share a unique long PN code

sequence. To establish a unique logical communications channel for each user within the second group, each user is further assigned a unique orthogonal or near-orthogonal spreading code. By using an orthogonal spreading code such as a Walsh code, overall system noise is also minimized to improve overall system capacity. The system may further employ short PN codes to enable each terminal within either the first or second groups to distinguish communications from one particular base station from other base stations within the terminal's vicinity.

To understand the code offset or code phase offset, it is important to understand how a PN sequence is generated. In an IS-95B system, a 42-bit Linear Feedback Shift Register (LFSR) is used to generate the long PN code sequence. Every terminal in an IS-95B system uses the same LFSR that generates the same long PN code sequence. Mathematically, the sequence is produced by the modulo-2 inner product of a 42-bit mask and 42-bit state vector of the LFSR which is defined by following characteristic the polynomial: $p(x) = x^{42} + x^{35} + x^{33} + x^{31} + x^{27} + x^{26} + x^{25} + x^{22} + x^{21} + x^{19} + x^{18} + x^{17} + x^{16} + x^{10} + x^7 + x^6 + x^5 + x^3 + x^2 + x + 1$. At a chip rate of 1.2288 Mcps, the long PN code sequence, with a period of $2^{42} - 1$, begins to repeat itself after approximately 41.4 days.

When a terminal initially originates a call in an IS-95B system, the 42-bit mask is derived, at least in part, from the terminal's unique electronic serial number (ESN). Thus, the 42-bit mask is unique for every terminal because the ESN is unique for every terminal. Because every terminal is using the same long PN code sequence, the 42-bit mask uniquely defines the initial state or phase of the long PN code sequence. Therefore, it is the initial state or phase of the common long PN code sequence that determines the unique logical communications channel between a terminal and base station (on the reverse link).

By analogy, one can think of the long PN code sequence as a loop race track where start and finish are the same position, *i.e.*, the PN code sequence eventually repeats itself. The terminals are analogous to cars that are initially located at various positions within the race track, *i.e.*, each car's initial position on the race track corresponds to the initial state or phase of the long PN code sequence for each terminal as determined by the long code mask. Thus, as all of the cars move (*i.e.*, terminals communicate with the base station) at the same speed on the race track (*i.e.*, the same chip rate), they maintain the same relative distance from each other while their position (*i.e.*, phase offset) changes on the track in relation to time. Generally, the terms code offset, phase offset, code phase offset, phase shift, time offset, sequence state, and phase in relation to a PN code sequence are interchangeably used to refer to the state of the PN code sequence at a particular time.

The same analogy applies to the short PN sequence in an IS-95B system except that the race track is much shorter. With a 2^{15}-1 period, the short PN sequence repeats itself every 26.67 ms. Also, a common offset or initial state for the short PN code sequence is associated with each base station in an IS-95B system to allow terminals to distinguish simultaneous communications from multiple base stations.

In one embodiment of the present invention, a unique offset of a common PN code sequence is shared by all the terminals of a second group for reverse link communications with a base station while a unique offset of a common PN code sequence is used by each terminal of a first group for reverse link communications with a base station. To define a unique reverse link communications channel for each terminal in the second group with a base station, the present invention advantageously assigns an additional unique orthogonal spreading code to each terminal that is applied to reverse link communications with a base station. Thus, the terminals of the second group only use one unique offset of the common PN code sequence and, effectively, "use up" only one logical communications channel from the first group's perspective, while actually occupying uniquely defined logical communications channels based on the unique orthogonal spreading code assigned to each terminal.

As shown in FIG. 3 of the Application and explained in the specification[1], the present invention, in one embodiment, applies three spreading codes to digital signal 402 for terminals within the second group: (i) a short PN codes with a common offset for a particular base station, (ii) a unique orthogonal Walsh code to define a unique logical communications channel for each terminal in the second group, and (iii) a long PN code sequence with an unique offset shared by the second group of terminals. It is important to note that the offset shared by the second group is a unique offset from the base station's perspective. Thus, a third group could be assigned another unique offset for the long PN code sequence that is shared by all the terminals of the third group. A fourth group could be assigned another unique offset, and so on.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

In an Amendment and Reply, the Applicants amended Claim 1 to recite in pertinent part "a unique phase offset of that code that is shared by each user of the second group," identifying that support for the claim amendment is at least found in original Claim 24 and on page 11, lines 8-18 of the Specification.[2] In a Final Action, the Examiner rejected Claim 1, as amended, under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement, because the amendment "is not supported by Fig. 1, as indicated by the Applicant[s] in the Amendment . . ."[3]

So a first issue is, can an Examiner reject a claim amendment under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement when the Examiner has failed to considered support in the originally-filed specification as identified by the Applicants?

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1 Application Specification at page 10, line 17 through page 11, line18.

2 Amendment filed in the U.S. Patent and Trademark Office (USPTO) on May 11, 2004 at page 14, lines 20-21.

3 Final Office Action mailed from the USPTO on July 29, 2004 (Paper Number 9) at page 10, paragraph 7.

In the Final Action, the Examiner maintains rejections of Claims 1-36, under 35 U.S.C. § 103(a) as being obvious in view of earlier-cited references[4], but fails to consider arguments in reply to earlier rejections as they are considered moot in view of new ground(s) of rejection, without identifying new grounds of rejection.

A second issue is, can an Examiner fail to rebut earlier arguments in view of new ground(s) of rejection without identifying any new ground(s) of rejection?

VII. ARGUMENT

A. Whether Claim 1 is Properly Rejected Under 35 U.S.C. §112, First Paragraph, as Containing Subject Matter That is Not Supported by Adequate Written Description.

Claim 1 stands rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter that is not supported by adequate written description. Claims 1-23, which recite, "a unique phase offset of that code that is shared by each user of the second group" stand or fall together.

1. The rejection should be reversed, because the Examiner has failed to establish *prima facie* lack of written description requirement.

A description as filed is presumed adequate unless or until sufficient evidence or reasoning to the contrary is presented by an examiner.[5] Consequently, the initial burden is on the examiner to present a preponderance of evidence why a person skilled in the art would not recognize in an applicants' disclosure a description of the invention as defined by the claims.[6] According to the United States Patent and Trademark Office (USPTO) guidelines for examination, an examiner must set forth express findings of fact that support any lack of written description conclusion. These findings include establishing a *prima facie* case by providing reasons why a person skilled in the art would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the originally-filed application.[7]

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4 *Ibid* at page 2, paragraph 4 and page 9, paragraph 5.

5 MPEP § 2163.04, referring to *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971).

6 MPEP § 2163.04, citing *In re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976).

7 *Ibid.*

With respect to Claim 1, the Examiner has failed to establish *prima facie* lack of written description requirement because express findings of fact were not set forth to support such a conclusion. In a Final Action, the Examiner identified the claim limitation at issue as "assigning to the second group of terminals the same code as used by the first group and a unique phase offset of that code [that] is shared by each user of the second group."[8] With respect to this claim limitation, the Examiner merely indicates that it "is not supported by the specification as indicated by the Applicants in the Amendment on 5/13/04 of the originally filed Application."[9]

First, the Examiner has mischaracterized the Amendment and Reply filed in the USPTO under certificate of express mail on May 11, 2004 (hereinafter Reply). Namely, the Examiner erroneously asserts that the Applicants have indicated Fig. 1 represents support for amendments to Claim 1.[10] Although the Reply does indicate in a "Remarks" section, that "... all of the amendments are supported by Fig. 1 of the originally filed Application ..."[11], this assertion is qualified by an immediately preceding sentence that refers to "amendments to the Specification"[12] without any reference to amendments of the claims. That is, the specification was amended "at various paragraphs on pages 6 through 9 ... to correct typographical errors associated with the reference labels and elements for Fig. 1."[13] Thus, the reference to Fig. 1 provides support for those amendments to the Specification.

There is no suggestion in the Reply, however, that Fig. 1 provides any support for amendments to any of the claims. In fact, the Reply clearly indicates that support for the claim amendment can be found at least "in original Claim 24 and on page 11, lines 8-18 of the Specification,"[14] without any reference at all to Fig. 1.

Notwithstanding the Examiner's erroneous reference to Fig. 1, simply referring to one figure is an insufficient factual finding when other parts of the originally-filed application do arguably support the claim limitation. In some instances, a simple statement to the effect that:

> "Applicant has not pointed out where the new or amended claim is supported, nor does there appear to be a written description of the claim limitation '____' in the application as filed" may be sufficient where the claim is an amended claim, the

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8 Final Action at page 10, paragraph 7.

9 *Ibid.*

10 *Ibid.*

11 Amendment at page 9 at lines 5-6.

12 *Ibid* at lines 3-5.

13 *Ibid.*

14 Amendment at page 14, lines 20-21.

support for the limitation is not apparent, and applicant has not pointed out where the limitation is supported,"[15]

Although the claim limitation at issue was entered by way of amendment, justification for the use of such a simple statement in a rejection by the Examiner is not warranted.

First, the Applicants did, in fact, point out where support for the new limitation could be found within the originally-filed specification (*i.e.*, in original Claim 24 and on page 11, lines 8-18 of the Specification). There is no indication that the Examiner considered these relevant portions of the specification when preparing his rejections. To the extent that the relevant disclosure was considered and found to be insufficient, a rejection is still unwarranted because the Examiner failed to provide any reasons why a person skilled in the art would not have recognized that the inventor was in possession of the invention as claimed in view of the cited portions of the specification.

Thus, the Examiner has failed to establish that Claim 1, as previously amended, is unsupported by adequate written description , because the Examiner has failed to establish a *prima facie* lack of written description requirement. Namely, the express findings of fact provided, if any, do not support the assertion that a person skilled in the art would not have recognized that the inventor was in possession of the invention as claimed, and the reasons provided are insufficient as to why a person skilled in the art would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure.

2. The rejection should be reversed, because the specification contains a written description of the claimed subject matter that is sufficient to show possession of the claimed subject matter under the standard set forth in the case law and the PTO Guidelines.

The written description requirement is satisfied when the specification describes the claimed invention in sufficient detail so that one skilled in the art can reasonably

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[15] MPEP § 2163.04(I).

conclude that the inventor had possession of the claimed invention.[16]

> Compliance with the written description requirement is essentially a fact-based inquiry that will 'necessarily vary depending on the nature of the invention claimed.'[17]

Possession of the invention can be shown by:

> describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set for the claimed invention.[18]

> While there is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure.[19]

Claim 1, as previously amended, recites in pertinent part "assigning to the second group of terminals the same code as used by the first group and a unique phase offset of that code that is shared by each user of the second group." Claim 1 meets the requirements of 35 U.S.C. §112, first paragraph, because support for this feature can be found in the originally-filed application. The application recites in pertinent part that the:

> long code does not uniquely identify each user in the second group 210 ... [s]pecifically, this code may be one of the very same long codes that are used in the first group that uniquely identify their first group ... in this manner, all of the users in the second group 210 appear as a single legacy user of the first group 110.[20]

The application also recites that "individual users [of the first group] are identified by applying different phase offsets of the PN long code to each user."[21] Still further, the application

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16 MPEP § 2163.02, citing *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991).

17 MPEP § 2163 (I) citing *Enzo Biochem, Inc. v. Gen-Probe, Inc.* 323 F.3d 956, 969-70, 63 USPQ2d 1609, 1617 (Fed. Cir. 2002).

18 MPEP § 2163.01, citing *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997).

19 MPEP § 2163 (I)(B).

20 Specification at page 11 at lines 11-17.

21 Specification at page 10 at lines 12-13.

recites "[t]he second group of users ... encode their transmissions using the same code and one of the code phase offsets of that code."[22] Accordingly, the originally-filed specification indeed explicitly supports assigning to the second group of terminals the same code as used by the first group and a unique phase offset of that code that is shared by each user of the second group, because literal support for the amendment is provided within the originally-filed specification.

Additionally, the originally-filed specification includes disclosure that implicitly supports the amended claim, because the claimed invention is described in sufficient detail so that one skilled in the art can reasonably conclude that the inventors had possession of the claimed invention. As described in the specification, the users of the second group appear as a single user of the first group by using the same long PN code as used by the first group with a unique (*i.e.*, different) phase offset of that code shared by each user of the second group. The unique phase offset distinguishes the entire second group of terminals from other single users of the first group, in the same manner that single users of the first group are distinguished from each other. By sharing this single (and unique) phase offset, all of the users of the second group appear as a single legacy user of the first group.

Thus, the specification contains a written description that is sufficient to show possession of the claimed subject matter, because the amended claim limitation is supported in the originally-filed specification through express, implicit, or inherent disclosure.

Furthermore, Claim 1, as previously amended, meets the requirements of 35 U.S.C. §112, first paragraph, because support can also be found in originally-filed Claim 24. According to the MPEP, it is well accepted that a "satisfactory description" may be provide in the claims or any other part of the originally-filed application.[23] Claim 24 recites, in pertinent part:

> ... each individual unit of the first set of access units having at least one unique, non-orthogonal scrambling sequence that is selected from a unique phase shift of a longer pseudorandom noise sequence, and wherein the second group of access units share a common chip rate scrambling code that is not used by the first group of access units.

The common chip rate scrambling code shared by the second group of access units is described within the claim as one of the codes not used by the first group of terminals. This

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22 *Ibid* at page 4 at lines 6-9.

23 MPEP § 2163 (I).

implies that the code could have been used by the first group of terminals. Therefore, that code is the same as those chip rate scrambling codes. Accordingly, the common chip rate scrambling code shared by the second group of access units is a non-orthogonal scrambling sequence that is selected from a unique phase shift of a longer pseudorandom noise sequence.

Thus, the specification contains a written description that is sufficient to show possession of the claimed subject matter, because the amended claim limitation is supported in the originally-filed specification, including the claims, through express, implicit, or inherent disclosure.

B. Whether Claims 1-35 are Properly Rejected Under U.S.C. § 103(a) as Being Obvious Over Roh et al. (U.S. Patent No. 6,249,517) in View of Zehavi (U.S. Patent No. 5,414,728).

Claims 1-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,49,517 to Roh et al. (hereinafter, "the Roh et al. patent") in view of U.S. Patent No. 5,414,728 to Zehavi (hereinafter, "the Zehavi patent"). Claims 1-36 stand or fall together.

1. The rejection with respect to Claims 24-35 should be reversed, because the Examiner failed to consider Applicants' earlier reply in view of new ground(s) of rejection, without identifying any new ground(s) of rejection.

In the Final Action, the Examiner states "Applicants' arguments with respect to Claims 1 and 24 have been considered but are *moot* in view of the new ground(s) of rejection"[24] (emphasis added). Although the Examiner refers to new ground(s) of rejection, the Examiner fails to provide any new grounds of rejection with respect to Claims 24-35. (A new ground of rejection for Claims 1-23 would be the rejection under 35 U.S.C. 112, first paragraph; however, no such rejection was offered for Claims 24-35.)

In a first Office Action, Claims 1-35 (including independent Apparatus Claim 24) were rejected under 25 U.S.C. § 103(a) as being unpatentable over Roh et al. (U.S. Patent No. 6,249,517) in view of Zehavi (U.S. Patent No. 5,414,728)[25]. In their Reply, Applicants

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[24] Final Action at page 10, paragraph 6.

[25] First Action mailed from the USPTO on February 12, 2004 (Paper Number 7) at page 2, paragraph 4.

amended Claim 24 and provided argument as to why Claim 24, as amended, and Claims 25-35 depending either directly or indirectly therefrom, are not obvious under 35 U.S.C. § 103(a) in view of the cited references and should be allowed.

But in the Final Action, the Examiner again rejected Claims 24-35 on the same grounds as being obvious under 35 U.S.C. § 103(a) in view of the same references. Thus, the Final Action fails to provide any new ground(s) of rejection as suggested by the Examiner, yet provides no rebuttal to detailed arguments advanced in the Reply with respect to these claims.

In making a final rejection, all grounds relied upon must be "clearly developed to such an extent that Applicants may readily judge the advisability of an appeal."[26] In situations in which an earlier office action contains a complete statement of a ground of rejection, a final rejection "may refer to such a statement and also should include a rebuttal of any arguments raised in the applicant's reply."[27]

The Final Action fails to clearly develop any new ground(s) of rejection with respect to Claims 24-35. In fact, the Final Action fails to even provide any of the new ground(s) or rejections referred to therein, let alone develop them. Additionally, the Final Action fails to include any rebuttal of the detailed arguments advanced in the Reply. Rather, the Final Action merely states those arguments are "moot in view of the new ground(s) or rejection." Without either identifying the alleged new ground(s) or rejection, or rebutting the detailed argument advanced in the Reply, the Applicants are unfairly disadvantaged in the instant appeal of the final rejection with respect to these claims.

As the situation presented by the Final Action is inconsistent with the USPTO guidelines, finality should be removed, and the claims allowed. To the extent the Examiner believes there are new ground(s) of rejection, finality should be removed and these grounds should be identified. Alternatively or in addition, to the extent the Examiner is not persuaded by arguments advanced within the earlier Reply, the Examiner should provide rebuttal to those arguments, as applicable.

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26 MPEP § 706.07(a).

27 *Ibid.*

2. The rejection should be reversed, because the combined teachings of the cited references do not provide the suggestion or motivation and reasonable expectation of success necessary to establish a *prima facie* case under 35 U.S.C. § 103(a).

By overcoming the 35 U.S.C. § 112, first paragraph, as argued above, Claim 1 includes limitations added by amendment in the earlier Reply. Consequently, Claims 2-23, which depend either directly or indirectly from amended Claim 1 also include the limitations of amended Claim 1. Claims 25-35, which depend either directly or indirectly from amended Claim 24, also include similar limitations. Accordingly, without rebuttal, or new grounds or rejection, Applicants' earlier arguments provided within the Reply still apply with respect to these claims.

According to the Examiner, Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over Roh et al. in view of Zehavi, in part, because Roh et al. discloses that an unique "orthogonal code and the long PN code with a fixed or common time offset as the channel-separating and PN spreading code" is used for "Group 2."[28]

In contrast, the Roh et al. patent describes a single CDMA transmitter apparatus with the ability to operate in two modes: 1) using an unique orthogonal spreading code with a long PN code sequence having a fixed code offset "allocated to the corresponding cell or sector" when an optimal modulation rate is used or 2) using a long PN code sequence with a unique offset.[29] As shown in Fig. 2, a single terminal uses a switching controller 29 to apply orthogonal spreader 25 depending on the digital bit rate, chip rate, and length of the orthogonal code. If the "product of the digital bit rate and the length of the orthogonal code is equal to the chip rate,"[30] switch controller 29 applies an orthogonal spreading code to the traffic signal using orthogonal spreader 25 along with a long PN code sequence with a fixed code offset on the I and Q channels. If the product is not equal to the chip rate, switch controller 29 bypasses orthogonal spreader 25 and a long PN code sequence with a unique offset is applied to the traffic data on the I and Q channels.[31]

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[28] Office Action at page 3, lines 9-16.

[29] U.S. Patent No. 6,249,517 to Roh et al. at column 4, lines 10-12.

[30] *Ibid* at column 4, lines 3-12.

As shown in Fig. 2, when the orthogonal spreader 25 is applied, the Roh et al. patent describes simply applying two spreading codes to a data input: 1) a long PN code with a common offset for a particular base station and 2) a unique orthogonal Walsh code to define a unique logical communications channel for the terminal. The apparatus of Roh et al. does not imply or suggest using a long PN code with an unique offset that is shared by a second group of terminals, as recited in Claim 1.

Roh et al., however, does not teach having the PN spreading code applied to traffic channels in a first and second group of terminals. Rather, Roh et al. is only suggesting that the CDMA transmitter in a single terminal be operated in two different modes (either with the orthogonal spreader operative or not). It is clear that the circuit in Fig. 2 of Roh et al. is for a transmitter in a single terminal that chooses whether an orthogonal spreader is activated, depending upon a desired data rate. The Roh et al. patent is not describing a system, such as the Applicants', in which groups of terminals use different modulation codes according to different predetermined assigned functions, that have nothing to do with the traffic data rate.

Furthermore, Claim 1 of the present Application requires that each user of the second group be assigned a second additional PN spreading code that is used regardless of the desired traffic data rate. This is another difference from Roh et al. which suggests activating orthogonal codes based on a desired data rate, not based on user groupings.

Even if an argument is made that some of the users in a system as suggested by Roh et al. would be operating in the first mode and other sets of users would be operating in the second mode, one does still not arrive at Applicants' invention. As stated in the Roh et al., the "long PN spreading is carried out by the long codes having a fixed time offset allocated to the corresponding cell or sector."[32] There is no suggestion, however, in Roh et al. of assigning a PN spreading code with a unique code, phase, or time offset that is shared by all users of a second group. This distinction is subtle, but significant, because the present invention allows the second group of terminals to be assigned and share any available unique code offset and appear "as a

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31 *Ibid* at column 4, lines 13-22.

32 *Ibid* at column 4, lines 10-12.

single legacy user of the first group,"[33] while Roh et al. requires a terminal that switches to a first spreading mode to use a fixed and common code offset associated with a particular cell or sector.

This distinction is also illustrated by comparing Fig. 2 of Roh et al. with Fig. 3 of the present invention. In Fig. 2 of Roh et al., when a terminal is operating in the first mode, the long PN code sequence, using a fixed offset associated with a cell/sector, is applied to the traffic signal in addition to orthogonal spreading. In Fig. 3 of the present invention, a short PN code sequence with a fixed offset associated with a base station and a long PN code sequence with a unique code offset shared by users of a second group are applied to the traffic signal in addition to orthogonal spreading.

Because each cell/sector is typically associated with a base station in an IS-95 CDMA system, the long PN code sequence using a fixed offset associated with a cell/sector of Roh et al. is equivalent to the short PN code sequence using a fixed offset associated with a base station of the present invention. Whether a long or short PN sequence is used typically depends on non-relevant issues such a user privacy because a longer sequence takes more time to repeat itself. Thus, Fig. 3 of the present invention distinguishes the long PN code sequence with an unique code offset shared by users of a second group which is not disclosed in Roh et al.

Therefore, previously amended Claim 1 recites "a unique phase offset of that code that is shared by each user of the second group" to distinguish the unique phase offset shared by the second group of the present invention from the fixed and common phase offset disclosed in Roh et al.

Turning briefly to the Zehavi patent, a CDMA system is described that provide in-phase (I) and quadrature phase (Q) spread spectrum communication channels through which a first and second information signal are transmitted respectively. Because the quadrature phase is 90 degrees offset from the in-phase signal, signals at one phase do not interfere with signals at the other phase. Thus, by using the I and Q phase channels, a digital communications terminal can transmit information at twice the data rate or simultaneously transmit the information of two users over the separate I and Q phases respectively.

As shown in Fig. 3, the Zehavi patent applies a PN sequence to the I and Q channels. The same PN sequence with the same offset may be used for a single terminal using both channels.

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[33] Specification at page 11, line 16.

Otherwise, "in the case where the I and Q channels are assigned to different users, the long PN scrambling code are preferably different *e.g.* ... the same code sequence but of different code phase offsets."[34] As explained previously, the "code phase offset" referred to in Zehavi is equivalent to the term "code offset" described in Roh et al, as they both refer to the state of the PN code sequence. Thus, it was not necessary for the Examiner to cite Zehavi, since it adds nothing more than Roh et al. Furthermore, it is important to note that the 90 degree phase shift between the I (sine) and Q (cosine) modulation channels mentioned in Zehavi is not the same as the code phase offset or code offset related to the PN code sequence.

The "code phase offset" disclosed in Zehavi refers to the same state of the long PN code sequence as the "code offset" described in Roh et al. Regardless, Zehavi also does not disclose or suggest assigning a PN spreading code with a unique code, phase, or time offset that is shared by a second group of users. Furthermore, the combination of Roh et al. and Zehavi do not suggest having a second group of users share a unique code, phase, or time offset for a long PN code sequence.

Because neither Roh et al. nor Zehavi disclose or suggest assigning a PN spreading code with unique code, phase, or time offset that is shared by a second group as recited in amended base Claim 1, the Office Action fails to make obvious the present invention as claimed in amended base Claim 1. Thus, the Examiner's rejection of Claim 1 under 35 U.S.C. §103(a) should be withdrawn.

Because Claims 2-23 depend from and are limited by base Claim 1, the foregoing arguments against obviousness apply. Accordingly, the various rejections of Claims 2-23 under 35 U.S.C. §103(a) should also be withdrawn.

For the same reasons as stated above, the Office Action fails to make a case of prima facie obviousness regarding previously-amended base Claim 24. Accordingly, the rejection of Claim 24 should also be withdrawn.

Because Claims 25-35 depend from and are limited by base Claim 24, the foregoing arguments against obviousness apply. Accordingly, the various rejections of Claims 25-35 under 35 U.S.C. §103(a) should also be withdrawn.

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[34] U.S. Patent No. 5,414,728 to Zehavi et al. at column 6, lines 60-65.

C. Whether Claim 36 is Properly Rejected Under U.S.C. § 103(a) as Being Obvious Over Roh et al. (U.S. Patent No. 6,249,517) in View of Zehavi (U.S. Patent No. 5,414,728) and in Further View of Hiramatsu (U.S. Patent No. 6,266,363).

Claim 36 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the Roh et al. patent in view of the Zehavi patent as applied to Claims 1-35, and further in view of U.S. Patent No. 6,266,363 to Hiramatsu (hereinafter, the "Hiramatsu patent").

1. The rejection with respect to Claim 36 should be reversed, because the Examiner failed to consider Applicants' earlier reply in vew of new ground(s) of rejection without identifying any new ground(s) or rejection.

Claim 36 depends from amended Claim 24 and therefore includes the limitations added by way of amendment in the earlier Reply. The Examiner failed to rebut Applicants' detailed argument provided in the Reply, referring to new ground(s) of rejection without identifying any such new ground(s). Thus, the Examiner has failed to rebut the arguments.

As argued above with respect to Claims 24-35, the Final Action fails to clearly develop or even provide any new ground(s) of rejection with respect to Claim 36. Similarly, the Final Action also fails to include any rebuttal of the detailed arguments advanced in the Reply with respect to this claim. Rather, the Final Action merely states those arguments are "moot in view of the new ground(s) or rejection." Without either identifying the alleged new ground(s) or rejection, or rebutting the detailed argument advanced in the Reply, the Applicants are unfairly disadvantaged in the instant appeal of the final rejection with respect to these claims.

As described above with respect to Claims 24-35, finality of the rejection with respect to Claim 36 should be removed, and the claim allowed. To the extent the Examiner believes there are new ground(s) of rejection, finality should be removed and these grounds should be identified. Alternatively or in addition, to the extent the Examiner is not persuaded by arguments advanced within the earlier Reply, the Examiner should provide rebuttal to those arguments, as applicable.

2. The rejection should be reversed, because the combined teachings of the cited references do not provide the suggestion or motivation and reasonable expectation of success necessary to establish a *prima facie* case under 35 U.S.C. § 103(a).

Since the Final Action fails to provide rebuttal, or identify the new grounds or rejection referred to therein, Applicants' earlier argument provided within the Reply with respect to Claim 36 still applies.

Turning briefly to the Hiramatsu patent a CDMA transmitting and receiving apparatus is described wherein a base station can adaptively assign various amounts of spreading codes, types of spreading codes, or spreading codes of different lengths which may be used on the reverse link depending on the communications channel quality detected at the base station. For example, when the quality of the reverse link is below some threshold (*i.e.*, bad), the number of spreading codes is reduced, but when the quality of the reverse link is above some threshold (*i.e.*, good), the number of spreading codes is increased.[35]

With regard to the rejection of Claim 36 under 35 U.S.C. § 103(a) in view of Roh et al., Zehavi, and Hiramatsu, Hiramatsu also does not suggest having a second group of users share a unique code, phase, or time offset of a long PN code sequence which is lacking from the other cited art. Thus, no combination of the cited references, including Hiramatsu, make obvious the invention as now claimed.

Accordingly, the rejection of Claim 36 under 35 U.S.C. §103(a) should also be withdrawn.

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[35] U.S. Patent No. 6,266,363 to Hiramatsu at column 2, lines 60-64.

VIII. CONCLUSION

The Applicants respectfully submit that all the claims in the application are in condition for allowance. Support for amended Claim 1 can be found within the originally-filed specification. The grounds for rejection are not legally proper and should be withdrawn. Further, the arguments provided in the Reply filed on May 11, 2004, should be reconsidered in view of the amended claims.

Respectfully submitted,

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CLAIMS APPENDIX

1. (Previously presented) In a system which supports code division multiple access communication among members of a first group of terminals and among a second group of terminals, a method comprising the steps of:

assigning to the first group of terminals a first code, each user of the first group being uniquely identifiable by a unique code phase offset;

assigning to the second group of terminals the same code as used by the first group and a unique phase offset of that code that is shared by each user of the second group; and

assigning to each user of the second group an additional code, the additional code being unique for each of the terminals of the second group.

2. (Original) A method as in claim 1 wherein the code assigned to the first group of terminals is a common chipping rate code.

3. (Original) A method as in claim 1 wherein the additional codes assigned to the second group of terminals are a set of unique, orthogonal codes.

4. (Original) A method as in claim 1 wherein the code assigned to the first group of terminals is a unique, non-orthogonal scrambling sequence.

5. (Original) A method as in claim 1 wherein the first group of terminals uses scrambling codes that are unique phase shifts of a larger pseudorandom noise sequence.

6. (Original) A method as in claim 1 wherein the second group of terminals use additional codes that are a set of unique orthogonal codes.

7. (Original) A method as in claim 6 wherein the unique orthogonal code is used to scramble the transmissions of the second group of terminals at an indicated chip rate.

8. (Original) A method as in claim 7 wherein the transmission timing for the second group of terminals is synchronized to allow transmissions from the second group of terminals to be orthogonal to one another.

9. (Original) A method as in claim 1 wherein the two groups of terminals employ radio frequency modulation that is different from each other.

10. (Original) A method as in claim 1 wherein the two groups of terminals employ the codes in different spreading techniques.

11. (Original) A method as in claim 10 wherein the first group of terminals uses pairs of the codes as respective inputs to an in-phase and quadrature modulator.

12. (Original) A method as in claim 10 wherein the second group of terminals use the assigned additional codes as short scrambling codes.

13. (Original) A method as in claim 1 wherein a first group of terminals receives periodic timing adjustment information over a first link direction to provide for timing adjustment for a second link direction.

14. (Original) A method as in claim 13 wherein the second group of terminals do not receive such periodic timing adjustment information.

15. (Original) A method as in claim 1 wherein the second group of terminals use an additional code which is a short length orthogonal code.

16. (Original) A method as in claim 1 wherein the second group of terminals use an additional code which is a short length, bit augmented pseudorandom noise sequence.

17. (Original) A method as in claim 1 wherein the codes assigned to the first group of terminals and the additional codes assigned to the second group of terminals are used to encode

transmissions on a reverse communication link between remotely located wireless terminals and a centrally located wireless base station.

18. (Original) A method as in claim 1 wherein the first group of terminals are legacy cellular telephone terminals.

19. (Original) A method as in claim 18 wherein the first group of terminals are assigned codes according to a CDMA cellular telephone standard specification.

20. (Original) A method as in claim 19 wherein the CDMA cellular telephone standard specification is selected from the group consisting of IS-95 and CDMA-2000.

21. (Original) A method as in claim 18 wherein the second group of terminals are used in a wireless data communication system.

22. (Original) A method as in claim 21 wherein the additional codes assigned to the second group of terminals are a set of common chip rate scrambling codes.

23. (Original) A method as in claim 22 wherein the additional codes are scrambling codes that repeat every N chips, where N is an even number in a range from 128 to 32768 chips.

24. (Previously presented) A wireless communication system comprising a first set of access units and a second set of access units, the first set of access units and the second set of access units capable of communicating with a central base station wherein the first set of access units use a chip rate scrambling code to separate their user channels, each individual unit of the first set of access units having at least one unique, non-orthogonal scrambling sequence that is selected from a unique phase shift of a longer pseudorandom noise sequence, and wherein the second group of access units share a chip rate scrambling code derived from a unique phase shift of the longer pseudorandom noise sequence that is not used by the first group of access units.

25. (Original) The wireless communication system of claim 24 wherein each unit of the second set is assigned at least one unique orthogonal code.

26. (Original) The wireless communication system of claim 24 wherein the chip rate transmissions of the second set of access units are scrambled by the bits of the orthogonal code at a chipping rate.

27. (Original) The wireless communication system of claim 24 wherein the transmission timing of the second set of access units is controlled such that their transmissions are orthogonal to each other.

28. (Original) The wireless communication system of claim 24 wherein the scrambling code is 242 chips in length.

29. (Original) The wireless communication system of claim 24 wherein the first set of access units and the second set of access units employ different modulation techniques.

30. (Original) The wireless communication system of claim 24 wherein the first set of access units and the second set of access units employ different spreading techniques.

31. (Original) The wireless communication system of claim 30 wherein the first set of access units employ complex in-phase and quadrature spreading.

32. (Original) The wireless communication system of claim 31 wherein the complex in-phase and quadrature spreading uses two different scrambling codes.

33. (Original) The wireless communication system of claim 32 wherein the two different scrambling codes are 215 in length.

34. (Original) The wireless communication system of claim 32 wherein the two different scrambling codes comprise an in-phase (I) code and a quadrature (Q) code.

35. (Original) The wireless communication system of claim 31 wherein the second set of access units use a scrambling code that is 215 in length.

36. (Original) The wireless communication system of claim 24 wherein the access units are using the assigned codes to format signals for a reverse link communication signal.

Assignments on the Web > Patent Query

Patent Assignment Abstract of Title

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Patent #: NONE **Issue Dt:** **Application #:** 09898514 **Filing Dt:** 07/03/2001

Publication #: US20020009068 **Pub Dt:** 01/24/2002

Inventors: James A. Proctor JR., Pertti O. Alapuranen

Title: Method for allowing multi-user orthogonal and non-orthogonal interoperability of code channels

Assignment: 1

Reel/Frame: 012143/0623 **Recorded:** 09/12/2001 **Pages:** 4

Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

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Reel/Frame: 015000/0141 **Recorded:** 02/26/2004 **Pages:** 12

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Reel/Frame: 014351/0777 **Recorded:** 02/19/2004 **Pages:** 9

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Reel/Frame: 015000/0577 **Recorded:** 02/26/2004 **Pages:** 8

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Assignment: 7

Reel/Frame: 014420/0435 **Recorded:** 03/10/2004 **Pages:** 13

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